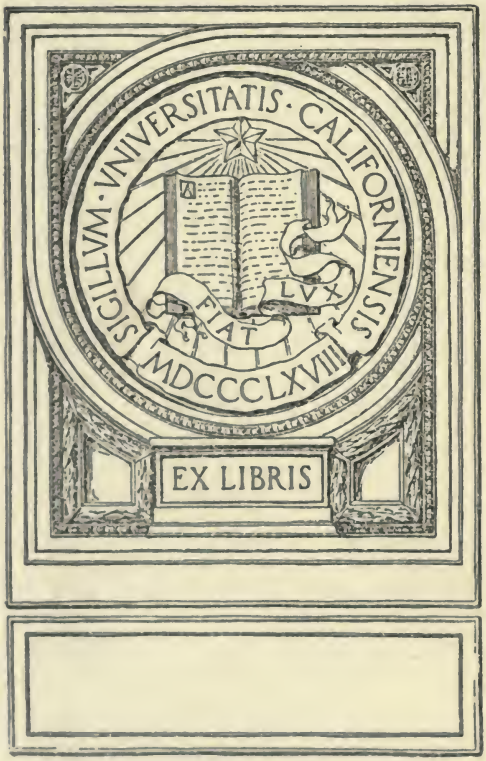
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BUREAU OF RAILWAY ECONOMICS

Established by Railways of the United States
for the Scientific Study of Transportation Problems

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Comparison of Capital Values—Agriculture, Manufactures, and the Railways

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1. Summary of Revenues and Expenses of Steam Roads in the United States for July, 1910. (Monthly Report Series, Bulletin No. 1.)
2. Summary of Revenues and Expenses of Steam Roads in the United States for August, 1910. (Monthly Report Series, Bulletin No. 2.)
3. Summary of Revenues and Expenses of Steam Roads in the United States for September, 1910. (Monthly Report Series, Bulletin No. 3.)
4. A Comparative Statement of Physical Valuation and Capitalization.
5. Preliminary Bulletin for November, 1910—Revenues and Expenses.
6. Railway Traffic Statistics, 1900-1909. (See No. 31.)
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8. Summary of Revenues and Expenses of Steam Roads in the United States for November, 1910. (Monthly Report Series, Bulletin No. 5.)
9. Summary of Revenues and Expenses of Steam Roads in the United States for December, 1910. (Monthly Report Series, Bulletin No. 6.)
10. Summary of Revenues and Expenses of Steam Roads in the United States for January, 1911.
11. (Out of Print.)
12. Summary of Revenues and Expenses of Steam Roads in the United States for February, 1911.
13. Summary of Revenues and Expenses of Steam Roads in the United States for March, 1911.
14. Summary of Revenues and Expenses of Steam Roads in the United States for April, 1911.
15. The Conflict Between Federal and State Regulation of the Railways.
16. Summary of Revenues and Expenses of Steam Roads in the United States for May, 1911.

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Comparison of Capital Values—
Agriculture, Manufactures, and the Railways

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SUMMARY.

According to the estimates of the national wealth of the United States made by the Bureau of the Census the value of the railways increased but little more than half as fast as the value of all property from 1890 to 1904.

The capital value of agriculture includes all farm property, land, buildings, implements, machinery, and live stock. The capital value of manufactures includes the value of property employed for the purposes of production, excepting rented property, but does not include any allowance for patent rights or good will. The capital value of the railways used in this comparison is the "cost of road and equipment" as it stands on their books.

From 1900 to 1910 the capital value of agriculture increased from $20,439,901,164 to $40,991,449,090; the capital value of manufactures from $8,975,256,000 to $18,428,270,000; the cost of road and equipment of the railways from $10,263,313,400 to $14,387,816,099.

The gross value of the products of manufacture increased from $11,406,927,000 in 1900 to $20,672,052,000 in 1910. The total operating revenues of the railways increased from $1,487,044,814 to $2,750,667,435. Thus the increase of 81.2 per cent in the gross value of manufactured products was accompanied by an increase of 105.3 per cent in manufacturing capital; while the increase of 85 per cent in the total operating revenues of the railways was accompanied by an increase of only 40.2 per cent in their cost of road and equipment.

The report of the Bureau of the Census for 1900 indicated that the gross capitalization of the industrial combinations then in existence was more than twice as great as their capital value. The gross capitalization of the railways was about 12 per cent greater than the cost of road and equipment in 1900 and 28 per cent greater in 1910. The net capitalization of the railways, which is the amount for which they are responsible to the public, almost exactly coincided in 1910 with the cost of road and equipment.

Because of the peculiar nature of the industry, it is impracticable to arrive at a satisfactory and comparable estimate of the net return on the capital in agriculture. The greater similarity of the manu-

facturing and railway industries permits estimates of the return on capital that in a broad and general way are comparable. Approximately, the percentage of net return on the capital value of manufactures in 1900 was 17.119 per cent and that on the cost of road and equipment of the railways 4.650 per cent. In 1910, when the capital value of manufactures had increased 105.3 per cent, the percentage of net return was 12.041 per cent, while on the cost of road and equipment of the railways, which had increased 40.2 per cent, the percentage of net return was 5.729 per cent. That is, in 1900 the percentage of net return on capital in manufactures was nearly four times as great as that on the cost of road and equipment of the railways; in 1910 it was over twice as great. In both cases the interest on capital is included in net return.

While these comparisons are subject to qualification, it is not believed that, were absolutely accurate and comparable data available, there would be any substantial change in the general conclusions.

COMPARISON OF CAPITAL VALUES— AGRICULTURE, MANUFACTURES, AND THE RAILWAYS.

Introduction.

Agriculture, which includes the production of the food supply and in a measure that of the raw material of manufacture; manufacturing, which is the transformation of raw material into a partly finished state, or into the finished product itself; and transportation, which is the conveyance of materials and products, of passengers and the mails, are the principal industries of the United States, and in this country the most important factor in transportation is the railway system.

It is of the first importance to know what are the amounts of capital invested respectively in agriculture, manufactures, and railways, and the amount and rate of return upon such capital. The impossibility, however, of ascertaining with absolute exactness the amount of the investments that have been made in these widespread and ramifying industries becomes apparent at the beginning of the inquiry, as does also the inability to make a precise distinction between the amount of investment and present capital value. This is especially true of a new and growing country like the United States, where values often have literally sprung from the ground almost without the investment of capital, and where natural increment has accounted in large part for the current value of land. Even so, the study of capital investment and return, carried out with care and a full appreciation of the difficulties involved, leads to significant results.

First of all must be considered certain essential differences in the character of the capital of these respective industries.

Although buildings, improvements such as fences, drains, etc., and appliances, such as implements and machinery, are indispensable for farm cultivation, the productivity of farm land in the United States depends in greater measure upon the fertility of the soil than upon the utilization of invested capital. As a growing population demands more and more of farm products, the value of farm land rises as the population increases, especially if it lies contiguous to populous centres. Although the use of continually improving methods of cultivation in-

creases the production of a given area and gives it a greater earning capacity, the declining yield after years of tillage makes necessary the increasing use of fertilizer, and thus tends to offset the larger earnings. Clearly, the land itself is the largest factor in the value of a farm, and the owner does not bring about that increase in value due to the growth of population, which is commonly designated as the "unearned increment."

Investment in a manufacturing plant includes the price paid for the land which forms the site, but the principal investment in the case of a plant of any magnitude is in the buildings and appliances in which and by means of which the processes of manufacture are carried on. In no small measure the return upon capital in manufacture depends upon efficient and economical methods, and upon skill in the designing and marketing of products for which there is demand. The value of the land may increase as other land in the vicinity becomes more valuable, and to this extent the value of a manufacturing plant may be enhanced by unearned increment. The buildings and appliances, however, tend to deteriorate as they are used, involving more rapid depreciation than is suffered by farm land because of tillage.

With a railway, as with a manufacturing plant, the land is an indispensable factor, and its value also enhances by unearned increment unless it be considered that it is largely because of transportation service that the value of adjoining land is enhanced, and that therefore in a measure the rising value of railway real estate is a reflex of the service performed by the railways. With a railway, as with a manufacturing enterprise, the principal investment is in the plant; in the case of the railway it is in the roadbed, cars and locomotives, buildings, and appliances. With a railway, as with a manufacturing plant, the return upon capital depends in no small measure upon efficient and economical methods of operation, and also upon the vigor with which traffic is secured and developed; and there is rapid depreciation.

Therefore there is a greater similarity between the railway and manufacturing industries than between either of these and the agricultural industry. A respect in which the agricultural distinctly differs from the manufacturing or railway industry is in the comparatively slight extent to which establishment as a "going concern" affects the capital value of the farm as contrasted with the considerable value which establishment as a going concern attaches to a manufacturing plant or a railway. A farm may change the character of its product

or even lie fallow for a year or more without great deterioration in its capital value. This applies in far less degree to a manufacturing establishment, and it does not apply at all to a railway, which is obliged to continue in transportation service without cessation. The continuing organization necessary to such permanence as a going concern is alone a considerable factor in its value.

Certain localities, and even particular farms, may gain a distinctive reputation for the production of certain grades of fruits, of vegetables, of live stock, or even of grains which command preferential prices, but in the main the bulk of the products of agriculture are marketed without regard to the immediate locality or the particular farm whence they came. In the case of most manufacturing establishments the distinctive reputation for a particular kind and grade of production is an asset of great value.

So also with a railway company. While a considerable share of the traffic of every railway is non-competitive, there are but few of the railway systems of the United States which are not dependent upon competitive traffic. In securing such traffic, and especially competitive passenger traffic, the reputation of a railway for efficient transportation is an asset of the highest value, and this reputation can only be gained through the development of an organization that must increase in efficiency.

Value as a "going concern" is therefore no doubt of some importance in the agricultural industry, but it is a prime factor in the aggregate value of a manufacturing establishment or of a railway. The amounts representing capital value used in this study, however, are the book values of the actual investment only, and contain no allowance for the value of patents, trade-marks, good will, or establishment as a going concern.

This study of capital values in the agricultural, manufacturing, and railway industries has been prepared with a keen appreciation of the differences in the nature of the capital in those industries, as well as of other difficulties, already discussed, that are inherent in the comparison of capital values.

For the reasons that are set forth in the appendix this study has been limited in the case of the railways and of agriculture to the twenty-year period extending from 1890 to 1910, and in the case of manufactures to the ten-year period from 1900 to 1910.

National Wealth of the United States.

Because of its significance in relation to this study there is here presented a comparative statement of the national wealth of the United States in 1890, 1900, and 1904 as estimated by the Bureau of the Census. The Census Bureau does not purpose to extend this investigation in the near future to include a period later than 1904.

Estimate of Wealth: United States [a]

Subject	1890.	1900.	1904.
Real property and improvements—taxed	$35,711,209,108	$46,324,839,234	$55,510,228,057
Real property and improvements—exempt	3,833,335,225	6,212,788,930	6,831,244,570
Farm implements and machinery	494,247,467	749,775,970	844,989,863
Live stock	2,308,767,573 [b]	3,306,473,278	4,073,791,736
Manufacturing machinery, tools and implements	3,058,593,441 [c]	2,541,046,639	3,297,754,180
Gold and silver coin and bullion	1,158,774,948	1,677,379,825	1,998,603,303
Railroads and their equipment	8,296,050,034	9,035,732,000	11,244,752,000
Street railways	389,357,289	1,576,197,160	2,219,966,000
Telegraphs	701,755,712	211,650,000	227,400,000
Telephones		400,324,000	585,840,000
Shipping and canals		537,849,478	846,489,804
Pullman and private cars	.....	98,836,600	123,000,000
All other	9,185,000,400	15,844,413,661	19,300,132,897
Total	$65,137,091,197 [d]	$88,517,306,775	$107,104,192,410

a Special Report of the Census Bureau on Wealth, Debt, and Taxation, 1907, pp. 27-29.

b This does not include the value of live stock in cities, towns, and villages. The value of such live stock is included in the value of live stock for 1900 and 1904, amounting to about one-tenth of the total value.

c Including product on hand, raw and manufactured. These items are partially covered under the heading "all other" in 1900 and 1904.

d This total exceeds the total given on page 29 of the Census report by $100,000,000. The discrepancy is due to an error of addition in the original table prepared by the Census Bureau in 1890.

Inasmuch as the classification of items followed by the Census Bureau in preparing these estimates of national wealth varied somewhat for the respective years, the rates of increase are not strictly comparable throughout. They suffice, however, for the purpose of a broad and general comparison.

Therefore it may be noted that the augmentation in the total estimated wealth of the United States between 1890 and 1904 was $41,967,101,213. This was an increase of 64.4 per cent, or nearly two-thirds, while the increase in the value of railroads and their equipment for the same period was $2,948,701,966, or 35.5 per cent. The rate of increase in the value of taxed real property and improvements from 1890 to 1904 was 55.4 per cent; in the value of untaxed real property and improvements, 78.2 per cent; in the value of farm implements and machinery, 71.0 per cent, and in the value of street railways, including interurban railways operated by electricity, 470.2 per cent. It will be noted that the value of the railroads, as shown by these reports of the Census, increased from 1890 to 1904 but little more than half as fast as the value of all property, and that the rate of increase in the value of every other form of property for which comparable values are available was considerably greater than in that of the railways.

Capital Values of the Agricultural, Manufacturing, and Railway Industries.

That the term "capital" as used in the reports of the Bureau of the Census on manufactures refers to the estimated or book value of the property employed in the business is made clear by the explanation of the term in the instructions to the Census enumerators. In 1910, for example, the instructions read as follows: "*Capital invested.* The purpose of this inquiry is to determine the value of property employed by the establishment for the purposes of its productive operation, but not including rented property. Patent rights and good will must not be considered as a part of the capital."

In its reports upon agriculture the Census Bureau uses the term "value of farm property" throughout, in preference to "capital" or "capital value." The value of farm property is the value placed upon it by the owner thereof, modified or adjusted in accordance with prevalent standard values.

The Interstate Commerce Commission has not attempted either to compute or to estimate the value of American railway property, but in its annual reports has shown the gross capitalization, the net capitalization, and the cost of road and equipment as reported by the railways. By "gross capitalization" is meant the total par value of outstanding stocks and bonds. "Net capitalization" is gross capitalization less such part of it as is held by the railways themselves. In other words, net capitalization is the total par value of stocks and bonds owned and held by the general public; that is, the amount of railway capitalization for which the railways are responsible to the public. Net capitalization stands therefore as a far better criterion of railway values than gross capitalization. The "cost of road and equipment" of the railways is the book value of road and equipment. No one of these three aggregates has exactly the same basis as the capital value reported for manufactures or the value of farm property reported for agriculture.

As is pointed out in the following extracts from the statistical reports of the Interstate Commerce Commission,[a] the amount of "cost of road and equipment" of the railways is not a wholly satisfactory criterion of the value of railway property:

[a] Statistics of Railways in the United States, 1888, pp. 5-6; 1890, pp. 97-98.

"Is it . . . possible to discover 'the cost and value of the carrier's property, franchises, and equipment?' The papers giving evidence respecting these facts may have been destroyed, or in the fierce struggle of rival managements for control of territory by means of the absorption of lines already built the records of the original companies may have been lost, the consolidated companies caring nothing for records except such as proved their right to the property absorbed. But of greater significance is the fact that in many instances the books of railway corporations do not go beyond settlement with the construction companies. . . . Moreover, since the inception of the railway system in the United States, the changes in mechanical appliances and the constant fluctuation in the prices of railway supplies are so great that the cost of railway property, even though it could be taken from the books of a company, would be useless as showing the present value of the property."

Notwithstanding these qualifications, the amount of "cost of road and equipment" of the railways shown in the reports of the Interstate Commerce Commission for 1890, 1900, and 1904 is so close to the value of railroads and their equipment as reported by the Bureau of the Census for the same years that it may be used as roughly approximating the tangible value of American railway property, and therefore may be taken as the aggregate more nearly analogous to the capital value of manufactures and the value of farm property as reported by the Bureau of the Census than the aggregates either of gross or of net capitalization.

The close correspondence of the value of the railways as reported by the Census Bureau for the years 1890, 1900, and 1904 and as shown by the aggregate of their reports of "cost of road and equipment" to the Interstate Commerce Commission for the same years is made clear in the following table. It will be perceived that the valuation for 1904 is indicated at an almost identical amount by the respective authorities.[a]

Year.	Estimate of Census Bureau.	Reports of the railways to the Interstate Commerce Commission.
1890	$8,296,050,000	$7,755,387,000
1900	9,035,732,000	10,263,313,000
1904	11,244,852,000	11,511,537,000

[a] It may be pointed out in this connection that the estimate made by the Census Bureau of railway valuation in 1904 was prepared under the supervision of joint officials of the Census Bureau and the Interstate Commerce Commission. This fact does not explain the close relationship between the cost of road and equipment of railways as returned to the Commission in 1904 and the valuation of railway property as computed by the Census Bureau for the same year. The former represents the value of railway property on the books of the railways themselves; the latter is a wholly original computation of the commercial valuation of railway operating property, arrived at by capitalizing the average net earnings of individual railways and railway systems. The complete difference of method utilized in reaching the respective aggregates for 1904 makes their close correspondence both striking and significant.

The capital values of the agricultural, manufacturing, and railway industries in 1890, 1900, 1905, and 1910, except as noted, are given in the next table.[a] It must be borne in mind that the significance of these amounts is limited by the qualifications that have been specified. As explained in the appendix, it is not possible to show manufacturing capital for 1890 on a comparable basis with that of 1900, 1905, and 1910; returns for that year in the case of manufactures are therefore omitted. The reports of the Bureau of the Census are the source of the amounts for agriculture and manufactures; the reports of the Interstate Commerce Commission for the items in regard to the railways. For the railways there are given cost of road and equipment, gross capitalization, and net capitalization. It will be perceived that in each case the cost of road and equipment exceeds the net capitalization, which is the amount of capitalization for which the railways are responsible to the public. The two amounts for 1910 are almost identical. Because of its correlative interest, the population of continental United States in each of the census years 1890, 1900, and 1910 is shown in the table. A census was not taken of either agriculture or the population in 1905.

CAPITAL VALUE OF AGRICULTURE, MANUFACTURES AND RAILWAYS OF THE UNITED STATES.

	1890.	1900.	1905.	1910.
Agriculture....	$16,082,267,689	$20,439,901,164	.....	$40,991,449,090
Manufactures..	.....	8,975,256,000	$12,675,581,000	18,428,270,000
Railways:				
Cost of road and equipment.....	7,755,387,381	10,263,313,400	11,951,348,949	14,387,816,099
Gross capitalization.....	9,437,343,420	11,491,034,960	13,805,258,121	18,417,132,238
Net capitalization [b]	7,126,673,041	8,803,156,067	9,940,853,945	14,375,529,748
Population.....	62,947,714	75,994,575	.....	91,972,266

The relative importance of the three industries is indicated by this table. In 1910, for example, using round numbers, the aggregate value of American farm property, including real estate, implements and

[a] In the tables of this study giving capital values the statistics presented for agriculture in 1890 and 1900 relate to June 1, and in 1910 to April 15. The statistics for manufactures in each case refer as nearly as possible to January 1, and the statistics for the railways to June 30.

[b] Up to 1906 the amounts representing net capitalization published by the Interstate Commerce Commission were incomplete to the extent that they did not include income bonds, equipment trust obligations, and miscellaneous obligations in the hands of the public.

machinery, and live stock, was reported at $41,000,000,000; the amount of capital invested in manufactures was reported as $18,500,000,000; while the total cost of road and equipment of the railways was reported as $14,400,000,000.

The rates of increase in the capital values thus reported, and of the population, are shown in the following table:

PERCENTAGE OF INCREASE IN CAPITAL VALUE.

	1900 over 1890.	1905 over 1900.	1910 over 1905.	1910 over 1900.
Agriculture	27.1	....	....	100.5
Manufactures	....	41.2	45.4	105.3
Railways:				
Cost of road and equipment	32.3	16.4	20.4	40.2
Gross capitalization	21.8	20.1	33.4	60.3
Net capitalization	23.5	12.9	44.6	63.3
Population	20.7	....	....	21.0

For the ten-year period, 1900 to 1910, the rate of increase in the capital value of agricultural property was 100.5 per cent, the rate of increase of capital invested in manufactures 105.3 per cent, and the rate of increase in the cost of road and equipment of the railways 40.2 per cent. Gross capitalization of the railways increased 60.3 per cent, and the net capitalization 63.3 per cent. The greater percentage of increase in capitalization than in cost of road and equipment was largely due to the fact that railways to a large extent have not written up on their books the values of their real properties as they increased, and that they have invested large amounts in their properties which they did not charge to property account. For the preceding decade, 1890 to 1900, the capital value of agriculture increased at the rate of 27.1 per cent, and the cost of road and equipment of the railways at the rate of 32.3 per cent. That is, during the earlier decade agricultural value increased in a somewhat lower ratio than railway investment, while during the second decade the rate of increase was two and a half times as high for agriculture and over two and a half times as high for manufactures as for railways. The increases in the capital values of agriculture and of manufactures in this second decade were each more than 50 per cent greater than even the increase in the capitalization of the railways.

As an indication of the extent to which the capitalization of industries, *i. e.*, their outstanding stock and bond issues, exceeds their capital value as reported to the Census Bureau and embodied in this study the following comparison has been made by that Bureau of the two

items for all the industrial combinations existent in the United States in 1900:[a]

Total capitalization authorized and outstanding.....	$3,093,096,000
Total capital, as reported to the Census Bureau.....	1,461,632,000

Thus the capitalization of these combinations was more than twice as great in amount as the capital value, represented by land, buildings, machinery, tools, and implements, cash, bills receivable, etc. The gross capitalization of the railways was about 12 per cent greater than the cost of road and equipment in 1900, and 28 per cent greater in 1910.

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[a] See the report of the Census Bureau on manufactures, 1900, Part I, pp. LXXVIII-LXXIX.

Agricultural Capital by Geographical Divisions and States.

The value of agricultural property in the larger geographical divisions of the United States and in the several States for 1890, 1900, and 1910, and the increase in value during these two decades, are given in the following Table No. 1. The amounts shown cover the value of farm land and buildings, but do not include farm implements and machinery and live stock. In other words, the table applies to real estate as distinguished from personal property.

This Table No. 1 covers only land and buildings, the value of which is governed in large measure, as has been pointed out, by the general development of the community. For comparison with the increase in values of manufacturing and railway properties, the following Table No. 2 is presented, covering all farm property, including land and buildings, implements and machinery, and live stock.

Manufacturing Capital by Geographical Divisions and States.

The amount of capital invested in manufactures in the larger geographical divisions and in the several States is shown in the following Table No. 3 for the years 1900, 1905, and 1910, together with the rate of increase for each five-year period and for the decade as a whole.

Table No. 1. VALUE OF FARM LAND AND BUILDINGS

(Reports of the Twelfth Census, 1900, Vol. v, pp. 696-7, Bulletin of

Division or State.	1890. Amount.	1900. Amount.
The United States	$13,279,252,649	$16,614,647,491
North Atlantic division	2,539,200,537	2,477,265,688
South Atlantic division	1,135,319,670	1,206,349,618
North Central division	7,069,767,154	9,563,880,438
South Central division	1,440,022,598	2,072,671,891
Western division	1,094,942,690	1,294,479,856
Alabama	$111,051,390	$134,618,183
Arizona	7,222,230	13,682,960
Arkansas	118,574,422	135,182,170
California	697,116,630	707,912,960
Colorado	85,035,180	106,344,035
Connecticut	95,000,595	97,425,068
Delaware	39,586,080	34,436,040
District of Columbia	6,471,120	11,273,990
Florida	72,745,180	40,799,838
Georgia	152,006,230	183,370,120
Idaho	17,431,580	42,318,183
Illinois	1,262,870,587	1,765,581,550
Indiana	754,789,110	841,735,340
Iowa	857,581,022	1,497,554,790
Kansas	559,726,046	643,652,770
Kentucky	346,339,360	382,004,890
Louisiana	85,381,270	141,130,610
Maine	98,567,730	96,502,150
Maryland	175,058,550	175,178,310
Massachusetts	127,538,284	158,019,290
Michigan	556,190,670	582,517,710
Minnesota	340,059,470	669,522,315
Mississippi	127,423,157	152,007,000
Missouri	625,858,361	843,979,213
Montana	25,512,340	62,026,090
Nebraska	402,358,913	577,660,020
Nevada	12,339,410	15,615,710
New Hampshire	66,162,600	70,124,360
New Jersey	159,262,840	162,591,010
New Mexico	8,140,800	20,888,814
New York	968,127,286	888,134,180
North Carolina	183,977,010	194,655,920
North Dakota	75,310,305	198,780,700
Ohio	1,050,031,828	1,036,615,180
Oklahoma [a]	8,581,170	170,804,675
Oregon	115,819,200	132,337,514
Pennsylvania	922,240,233	898,272,750
Rhode Island	21,873,479	23,125,260
South Carolina	99,104,600	126,761,530
South Dakota	107,466,335	220,133,190
Tennessee	242,700,540	265,150,750
Texas	399,971,289	691,773,613
Utah	28,402,780	50,778,350
Vermont	80,427,490	83,071,620
Virginia	254,490,600	271,578,200
Washington	83,461,660	115,609,710
West Virginia	151,880,300	168,295,670
Wisconsin	477,524,507	686,147,660
Wyoming	14,460,880	26,965,530

[a] Includes returns for Indian Territory in 1890 and 1900.

the Thirteenth Census on Agriculture—United States, 1910, pp. 12-13.)

1900.		1910.		
Increase over 1890.		Amount.	Increase over 1900.	
Amount.	Per cent.		Amount.	Per cent.
$3,335,394,842	25.1	$34,801,125,697	$18,186,478,206	109.5
[d] 61,934,849	[d] 2.4	3,161,493,911	684,228,223	27.6
71,029,948	6.3	2,486,436,474	1,280,086,856	106.1
2,494,113,284	35.3	20,488,657,464	10,924,777,026	114.2
632,649,293	43.9	4,866,994,721	2,794,322,830	134.8
199,537,166	18.2	3,797,543,127	2,503,063,271	193.4
$23,566,793	21.2	$288,253,591	$153,635,408	114.1
6,460,730	89.5	47,285,310	33,602,350	245.6
16,607,748	14.0	309,166,813	173,984,643	128.7
10,796,330	1.5	1,450,601,488	742,688,528	104.9
21,308,855	25.1	408,518,861	302,174,826	284.1
2,424,473	2.6	138,319,221	40,894,153	42.0
[d] 5,150,040	[d] 13.0	53,155,983	18,719,943	54.4
4,802,870	74.2	8,231,343	[d] 3,042,647	[d] 27.0
[d] 31,945,342	[d] 43.9	118,145,989	77,346,151	189.6
31,363,890	20.6	479,204,332	295,834,212	161.3
24,886,603	142.8	245,065,825	202,747,642	479.1
502,710,963	39.8	3,522,792,570	1,757,211,020	99.5
86,946,230	11.5	1,594,275,596	752,540,256	89.4
639,973,768	74.6	3,257,379,400	1,759,824,610	117.5
83,926,724	15.0	1,737,556,172	1,093,903,402	170.0
35,665,530	10.3	635,459,372	253,454,482	66.3
55,749,340	65.3	237,544,450	96,413,840	68.3
[d] 2,065,580	[d] 2.1	159,619,626	63,117,476	65.4
119,760	0.1	241,737,123	66,558,813	38.0
30,481,006	23.9	194,168,765	36,149,475	22.9
26,327,040	4.7	901,138,299	318,620,589	54.7
329,462,845	96.9	1,262,441,426	592,919,111	88.6
24,583,843	19.3	334,162,289	182,155,289	119.8
218,120,852	34.9	1,716,204,386	872,225,173	103.3
36,513,750	143.1	251,625,930	189,599,840	305.7
175,301,107	43.6	1,813,346,935	1,235,686,915	213.9
3,276,300	26.6	39,609,339	23,993,629	153.7
3,961,760	6.0	85,916,061	15,791,701	22.5
3,328,170	2.1	217,134,519	54,543,509	33.5
12,748,014	156.6	111,830,999	90,942,185	435.4
[d] 79,993,106	[d] 8.3	1,184,745,829	296,611,649	33.4
10,678,910	5.8	456,624,607	261,968,687	134.6
123,470,395	163.9	822,656,744	623,876,044	313.9
[d] 13,416,648	[d] 1.3	1,654,152,406	617,537,226	59.6
162,223,505	1890.5	738,677,224	567,872,549	332.5
16,518,314	14.3	455,576,309	323,238,795	244.3
[d] 23,967,483	[d] 2.6	1,041,068,755	142,796,005	15.9
1,251,781	5.7	27,932,860	4,807,600	20.8
27,656,930	27.9	332,888,081	206,126,551	162.6
112,666,855	104.8	1,005,080,807	784,947,617	356.6
22,450,210	9.3	480,522,587	215,371,837	81.2
291,802,324	73.0	1,843,208,395	1,151,434,782	166.4
22,375,570	78.8	117,545,332	66,766,982	131.5
2,644,130	3.3	112,588,275	29,516,655	35.5
17,087,600	6.7	532,058,062	260,479,862	95.9
32,148,050	38.5	571,968,457	456,358,747	394.7
16,415,370	10.8	264,390,954	96,095,284	57.1
208,623,153	43.7	1,201,632,723	515,485,063	75.1
12,504,650	86.5	97,915,277	70,949,747	263.1

[d] *Decrease.*

Table No. 2. VALUE OF FARM PROPERTY (INCLUDING LAND,

(Reports of the Twelfth Census, 1900, Vol. v, pp. 694-5, Bulletin of

Division or State.	1890. Amount.	1900. Amount.
The United States	$16,082,267,689	$20,439,901,164
North Atlantic division	2,969,971,293	2,950,532,628
South Atlantic division	1,333,395489	1,454,031,316
North Central division	8,517,696,731	11,504,919,848
South Central division	1,890,521,698	2,815,823,403
Western division	1,370,682,478	1,714,593,969
Alabama	$146,339,765	$179,399,882
Arizona	20,646,263	29,993,847
Arkansas	155,019,702	181,416,001
California	777,381,767	796,527,955
Colorado	117,439,558	161,045,101
Connecticut	108,050,708	113,305,580
Delaware	45,620,460	40,697,654
District of Columbia	6,680,000	11,535,376
Florida	81,046,200	53,929,064
Georgia	189,249,198	228,374,637
Idaho	25,857,530	67,271,202
Illinois	1,477,759,187	2,004,316,897
Indiana	869,322,787	978,616,471
Iowa	1,100,682,579	1,834,345,546
Kansas	706,664,141	864,100,286
Kentucky	428,170,266	471,045,856
Louisiana	110,447,005	198,536,906
Maine	122,347,283	122,410,904
Maryland	200,792,960	204,645,407
Massachusetts	147,677,402	182,646,704
Michigan	647,938,255	690,355,734
Minnesota	414,701,626	788,684,642
Mississippi	167,328,457	204,221 027
Missouri	786,390,253	1,033,121,897
Montana	60,135,102	117,859,823
Nebraska	511,799,810	747,950,057
Nevada	18,678,710	28,673,835
New Hampshire	80,207,575	85,842,096
New Jersey	182,452,914	189,533,660
New Mexico	33,543,141	53,767,824
New York	1,139,310,716	1,069,723,895
North Carolina	216,707,500	233,834,693
North Dakota	100,745,779	255,266,751
Ohio	1,195,688,864	1,198,923,946
Oklahoma (a)	18,197,749	277,525,433
Oregon	143,024,800	172,761,287
Pennsylvania	1,062,939,846	1,051,629,173
Rhode Island	25,179,479	26,989,189
South Carolina	119,849,272	153,591,159
South Dakota	145,527,556	297,525,302
Tennessee	312,891,650	341,202,025
Texas	552,127,104	962,476,273
Utah	39,482,206	75,175,141
Vermont	101,805,370	108,451,427
Virginia	294,488,569	323,515,977
Washington	100,724,970	144,040,547
West Virginia	178,961,330	203,907,349
Wisconsin	560,475,894	811,712,319
Wyoming	33,768,431	67,477,407

(a) Includes returns for Indian Territory in 1890 and 1900.

the Thirteenth Census of Agriculture—United States, 1910, pp. 12-13.)

1900.		1910.		
Increase over 1890.		Amount.	Increase over 1900.	
Amount.	Per cent.		Amount.	Per cent.
$4,357,633,475	27.1	$40,991,449,090	$20,551,547,926	100.5
[d] *19,438,665*	[d] *.7*	3,826,829,479	876,296,851	29.7
120,635,827	9.0	2,951,200,775	1,497,169,457	103.0
2,987,223,117	35.1	23,654,437,577	12,149,517,729	105.6
925,301,705	48.9	6,020,926,116	3,205,102,713	113.8
343,911,491	25.1	4,538,055,145	2,823,461,176	164.7
$33,060,117	22.6	$370,138,429	$190,738,547	106.3
9,347,584	45.3	75,123,970	45,130,123	150.5
26,396,299	17.0	400,089,303	218,673,302	120.5
19,146,188	2.5	1,614,694,584	818,166,629	102.7
43,605,543	37.1	491,471,806	330,426,705	205.2
5,254,872	4.9	159,399,771	46,094,191	40.7
[d] *4,922,806*	[d] *10.8*	63,179,201	22,481,547	55.2
4,855,376	72.7	8,476,533	[d] *3,058,843*	[d] *26.5*
[d] *27,117,136*	[d] *33.5*	143,183,183	89,254,119	165.5
39,125,439	20.7	580,546,381	352,171,744	154.2
41,413,672	160.2	305,317,185	238,045,983	353.9
526,557,710	35.6	3,905,321,075	1,901,004,178	94.8
109,293,684	12.6	1,809,135,238	830,518,767	84.9
733,662,967	66.7	3,745,860,544	1,911,514,998	104.2
157,436,145	22.3	2,039,389,910	1,175,289,624	136.0
42,875,590	10.0	773,797,880	302,752,024	64.3
88,089,901	79.8	301,220,988	102,684,082	51.7
63,621	[b]	199,271,998	76,861,094	62.8
3,852,447	1.9	286,167,028	81,521,621	39.8
34,969,302	23.7	226,474,025	43,827,321	24.0
42,417,479	6.5	1,088,858,379	398,502,645	57.7
373,983,016	90.2	1,476,411,737	687,727,095	87.2
36,892,570	22.0	426,314,634	222,093,607	108.8
246,731,644	31.4	2,052,917,488	1,019,795,591	98.7
57,724,721	96.0	347,828,770	229,968,947	195.1
236,150,247	46.1	2,079,818,647	1,331,868,590	178.1
9,995,125	53.5	60,399,365	31,725,530	110.6
5,634,521	7.0	103,704,196	17,862,100	20.8
7,080,746	3.9	254,832,665	65,299,005	34.5
20,224,683	60.3	159,447,990	105,680,166	196.6
[d] *69,586,821*	[d] *6.1*	1,451,481,495	381,757,600	35.7
17,127,193	7.9	537,716,210	303,881,517	130.0
154,520,972	153.4	974,814,205	719,547,454	281.9
3,235,082	.3	1,902,694,589	703,770,643	58.7
259,327,684	1425.1	918,198,882	640,673,449	230.9
29,736,487	20.8	528,243,782	355,482,495	205.8
[d] *11,310,673*	[d] *1.1*	1,253,274,862	201,645,689	19.2
1,809,710	7.2	32,990,739	6,001,550	22.2
33,741,887	28.2	392,128,314	238,537,155	155.3
151,997,746	104.4	1,166,096,980	868,571,678	291.9
28,310,375	9.0	612,520,836	271,318,811	79.5
410,349,169	74.3	2,218,645,164	1,256,168,891	130.5
35,692,935	90.4	150,795,201	75,620,060	100.6
6,646,057	6.5	145,399,728	36,948,301	34.1
29,027,408	9.9	625,065,383	301,549,406	93.2
43,315,577	43.0	637,543,411	493,502,864	342.6
24,946,019	13.9	314,738,540	110,831,191	54.4
251,236,425	44.8	1,413,118,785	601,406,466	74.1
33,708,976	99.8	167,189,081	99,711,674	147.8

[b] Less than one-tenth of one per cent. [d] *Decrease.*

Table No. 3. CAPITAL INVESTED IN MANUFACTURES,

(From 13th Census Bulletin on Manufactures—U. S., Table II, pp. 85-87; includes

Division or State.	Total capital, 1900.	Total capital, 1905.		
		Amount.	Increase over 1900.	
			Amount.	Per cent.
The United States	$8,975,256,000	$12,675,581,000	$3,700,325,000	41.2
North Atlantic division	4,958,249,000	6,613,352,000	1,655,103,000	33.4
South Atlantic division.	583,328,000	930,420,000	347,092,000	59.5
North Central division.	2,633,570,000	3,753,350,000	1,119,780,000	42.5
South Central division.	427,983,000	734,267,000	306,284,000	71.6
Western division	372,126,000	644,192,000	272,066,000	73.1
Alabama	$60,166,000	$105,383,000	$45,217,000	75.2
Arizona	9,517,000	14,396,000	4,879,000	51.3
Arkansas	25,385,000	46,306,000	20,921,000	82.4
California	175,468,000	282,647,000	107,179,000	61.1
Colorado	58,173,000	107,664,000	49,491,000	85.1
Connecticut	299,207,000	373,283,000	74,076,000	24.8
Delaware	38,791,000	50,926,000	12,135,000	31.3
District of Columbia	17,961,000	20,200,000	2,239,000	12.5
Florida	25,682,000	32,972,000	7,290,000	28.4
Georgia	79,303,000	135,211,000	55,908,000	70.5
Idaho	2,130,000	9,689,000	7,559,000	354.9
Illinois	732,830,000	975,845,000	243,015,000	33.2
Indiana	219,321,000	312,071,000	92,750,000	42.3
Iowa	85,668,000	111,428,000	25,760,000	30.1
Kansas	59,458,000	88,680,000	29,222,000	49.1
Kentucky	87,996,000	147,282,000	59,286,000	67.4
Louisiana	100,875,000	150,811,000	49,936,000	49.5
Maine	114,008,000	143,708,000	29,700,000	26.1
Maryland	149,155,000	201,878,000	52,723,000	35.3
Massachusetts	781,868,000	965,949,000	184,081,000	23.5
Michigan	246,996,000	337,894,000	90,898,000	36.8
Minnesota	133,077,000	184,903,000	51,826,000	38.9
Mississippi	22,712,000	50,256,000	27,544,000	121.3
Missouri	223,781,000	379,369,000	155,588,000	69.5
Montana	38,225,000	52,590,000	14,365,000	37.6
Nebraska	65,906,000	80,235,000	14,329,000	21.7
Nevada	1,251,000	2,892,000	1,641,000	131.2
New Hampshire	92,146,000	109,495,000	17,349,000	18.8
New Jersey	477,301,000	715,060,000	237,759,000	49.8
New Mexico	2,161,000	4,638,000	2,477,000	114.6
New York	1,523,503,000	2,031,460,000	507,957,000	33.3
North Carolina	68,283,000	141,001,000	72,718,000	106.5
North Dakota	3,512,000	5,704,000	2,192,000	62.4
Ohio	570,909,000	856,989,000	286,080,000	50.1
Oklahoma	4,054,000	16,124,000	12,070,000	297.7
Oregon	28,359,000	44,023,000	15,664,000	55.2
Pennsylvania	1,449,815,000	1,995,837,000	546,022,000	37.7
Rhode Island	176,901,000	215,901,000	39,000,000	22.0
South Carolina	62,750,000	113,422,000	50,672,000	80.8
South Dakota	6,051,000	7,585,000	1,534,000	25.4
Tennessee	63,140,000	102,440,000	39,300,000	62.2
Texas	63,655,000	115,665,000	52,010,000	81.7
Utah	13,219,000	26,004,000	12,785,000	96.7
Vermont	43,500,000	62,659,000	19,159,000	44.0
Virginia	92,300,000	147,989,000	55,689,000	60.3
Washington	41,575,000	96,953,000	55,378,000	133.2
West Virginia	49,103,000	86,821,000	37,718,000	76.8
Wisconsin	286,061,000	412,647,000	126,586,000	44.3
Wyoming	2,048,000	2,696,000	648,000	31.6

[d] *Decrease.*

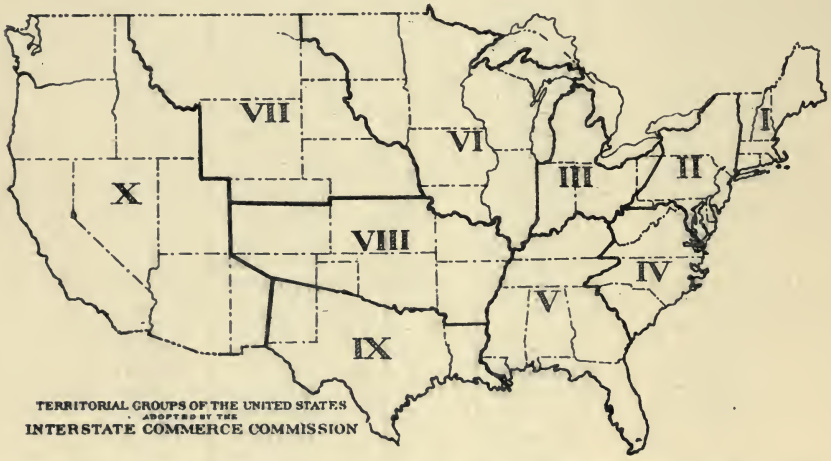
lands, buildings, machinery, tools, and implements, cash and sundries.)

Total capital, 1910.

Amount.	Increase over 1905.		Increase over 1900.	
	Amount.	Per cent.	Amount.	Per cent.
$18,428,270,000	$5,752,689,000	45.4	$9,453,014,000	105.3
9,009,529,000	2,396,177,000	36.2	4,051,280,000	81.7
1,368,475,000	438,055,000	47.1	785,147,000	134.6
5,718,797,000	1,965,447,000	52.4	3,085,227,000	117.1
1,134,015,000	399,748,000	54.4	706,032,000	165.0
1,197,454,000	553,262,000	85.9	825,328,000	221.8
$173,180,000	$67,797,000	64.3	$113,014,000	187.8
32,873,000	18,477,000	128.3	23,356,000	245.4
70,174,000	23,868,000	51.5	44,789,000	176.4
537,134,000	254,487,000	90.0	361,666,000	206.1
162,668,000	55,004,000	51.1	104,495,000	179.6
517,546,000	144,263,000	38.6	218,339,000	73.0
60,906,000	9,980,000	19.6	22,115,000	57.0
30,553,000	10,353,000	51.3	12,592,000	70.1
65,291,000	32,319,000	98.0	39,609,000	154.2
202,778,000	67,567,000	50.0	123,475,000	155.7
32,477,000	22,788,000	235.2	30,347,000	1,424.7
1,548,171,000	572,326,000	58.6	815,341,000	111.3
508,717,000	196,646,000	63.0	289,396,000	132.0
171,219,000	59,791,000	53.7	85,551,000	99.9
156,090,000	67,410,000	76.0	96,632,000	162.5
172,779,000	25,497,000	17.3	84,783,000	96.3
221,816,000	71,005,000	47.1	120,941,000	119.9
202,260,000	58,552,000	40.7	88,252,000	77.4
251,227,000	49,349,000	24.4	102,072,000	68.4
1,279,687,000	313,738,000	32.5	497,819,000	63.7
583,947,000	246,053,000	72.8	336,951,000	136.4
275,416,000	90,513,000	49.0	142,339,000	107.0
72,393,000	22,137,000	44.0	49,681,000	218.7
444,343,000	64,974,000	17.1	220,562,000	98.6
44,588,000	[d] *8,002,000*	[d] *15.2*	6,363,000	16.6
99,901,000	19,666,000	24.5	33,995,000	51.6
9,806,000	6,914,000	239.1	8,555,000	683.9
139,990,000	30,495,000	27.9	47,844,000	51.9
977,172,000	262,112,000	36.7	499,871,000	104.7
7,743,000	3,105,000	66.9	5,582,000	258.3
2,779,497,000	748,037,000	36.8	1,255,994,000	82.4
217,185,000	76,184,000	54.0	148,902,000	218.1
11,585,000	5,881,000	103.1	8,073,000	229.9
1,300,733,000	443,744,000	51.8	729,824,000	127.8
38,873,000	22,749,000	141.1	34,819,000	858.9
89,082,000	45,059,000	102.4	60,723,000	214.1
2,749,006,000	753,169,000	37.7	1,299,191,000	89.6
290,901,000	75,000,000	34.7	114,000,000	64.4
173,221,000	59,799,000	52.7	110,471,000	176.0
13,018,000	5,433,000	71.6	6,967,000	115.1
167,924,000	65,484,000	63.9	104,784,000	166.0
216,876,000	101,211,000	87.5	153,221,000	240.7
52,627,000	26,623,000	102.4	39,408,000	298.1
73,470,000	10,811,000	17.3	29,970,000	68.9
216,392,000	68,403,000	46.2	124,092,000	134.4
222,261,000	125,308,000	129.2	180,686,000	434.6
150,922,000	64,101,000	73.8	101,819,000	207.4
605,657,000	193,010,000	46.8	319,596,000	111.7
6,195,000	3,499,000	129.8	4,147,000	202.5

Capital by Interstate Commerce Commission Groups.

Statistics as to the cost of road and equipment of the railways are not available for the several States, nor for any geographical area less extensive than the United States as a whole. Statistics of the commercial value of the railways of each State were compiled by the Census Bureau in 1904, and will be found in the appendix to this study. The Interstate Commerce Commission publishes annually the gross capitalization of the railways for each of the ten territorial groups defined at the time it undertook the compilation of railway statistics. These groups are numbered consecutively and comprise respectively the areas indicated in the following map:



The gross capitalization of the railways of each of these ten territorial groups was as follows in 1890, 1900, and 1910:

Railway Gross Capitalization by Interstate Commerce Commission Groups.

Group.	1890.	1900.	1910.
I	$377,477,302	$472,329,210	$799,627,536
II	2,032,242,616	2,337,874,067	3,543,053,383
III	1,309,390,715	1,490,997,662	2,414,370,374
IV	410,704,029	631,863,020	960,183,380
V	742,670,372	903,681,993	1,346,913,136
VI	1,818,588,865	2,024,541,064	3,102,203,094
VII	443,136,450	560,763,313	1,047,244,431
VIII	1,047,274,401	1,395,350,723	2,260,370,943
IX	372,982,285	511,034,132	808,905,131
X	882,876,385	1,162,599,776	2,134,260,830

To secure statistics of the amount of capital invested in manufactures and of the value of agricultural property that may be compared with these aggregates of gross railway capitalization by groups, it will be necessary to combine into corresponding groups the returns of agricultural and manufacturing values shown by States in the preceding tables. While the group lines do not in every instance follow State boundaries, yet it will be possible to obtain a very close approximation to the several groups by including the returns of any State, parts of which are in different groups, in the returns of the group in which lies the greater part of its area. The results of this approximation are presented in the next two tables. The first gives the value of the farm property of each group in 1890, 1900, and 1910. This table covers farm property of all kinds, including land, buildings, implements, machinery, and live stock.

VALUE OF FARM PROPERTY BY CORRESPONDING GROUPS.

Group.	1890.	1900.	1910.
I.	$585,267,817	$639,645,900	$867,240,457
II.	2,637,796,896	2,567,765,165	3,317,411,784
III.	2,712,949,906	2,867,896,151	4,800,688,206
IV.	810,006,671	914,849,178	1,869,648,447
V.	1,325,025,536	1,473,172,491	2,906,501,343
VI.	3,654,365,065	5,694,326,155	11,515,526,346
VII.	751,230,899	1,230,812,589	3,760,933,478
VIII.	1,783,711,403	2,517,208,718	5,902,067,389
IX.	662,574,109	1,161,013,179	2,519,866,152
X.	1,159,339,387	1,368,211,638	3,531,565,488

The amounts of capital invested in the manufacturing industries of each group in 1900 and 1910 are shown in the following table:

CAPITAL INVESTED IN MANUFACTURES BY CORRESPONDING GROUPS.

Group.	1900.	1910.
I.	$1,507,630,000	$2,503,854,000
II.	3,656,526,000	6,848,361,000
III.	1,037,226,000	2,393,397,000
IV.	272,436,000	757,720,000
V.	338,999,000	854,345,000
VI.	1,241,148,000	2,612,048,000
VII.	112,230,000	163,702,000
VIII.	370,851,000	872,148,000
IX.	164,530,000	438,692,000
X.	273,680,000	984,003,000

The following table gives the rates of increase of the capital amounts set forth in the three preceding tables:

PERCENTAGE RATE OF INCREASE.

Group.	1890 to 1900.		1900 to 1910.		
	Agriculture.	Railways.	Agriculture.	Manufactures.	Railways.
I.....	9.3	25.1	35.6	66.1	69.3
II.....	[d] 2.7	15.0	29.2	87.3	51.6
III.....	5.7	13.9	67.4	130.7	61.9
IV.....	12.9	53.8	104.4	178.1	52.0
V.....	11.6	21.7	96.6	152.0	49.0
VI.....	55.8	11.3	102.2	110.5	53.2
VII.....	63.8	26.5	205.6	45.9	86.8
VIII.....	41.1	33.2	134.5	135.2	62.0
IX.....	75.2	37.0	117.0	166.6	58.3
X.....	18.0	31.7	158.1	259.5	83.6

[d] *Decrease.*

It will be borne in mind that these tables by groups give railway gross capitalization only. Neither net capitalization nor the cost of road and equipment are ascertainable for the respective groups. From 1890 to 1900 the gross capitalization of the railways increased in six of the ten groups at a higher ratio than the value of agricultural property. From 1900 to 1910, however, in all except Groups I, II, and III, where agriculture has not kept pace with other activities, the rate of increase in gross capitalization of the railways has been approximately one-half the rate of increase in the value of farm property. From 1900 to 1910 gross railway capitalization has increased in much lower ratio than the capital value of manufacturing, which is far less than the gross capitalization of the manufacturing industries. An exception is in Group I, and the only other exception in Group VII, where the development of railways has been especially necessary to serve the agricultural industries.

Comparison of Capital in Railways and in the Principal Manufacturing Industries.

The following table compares railway capital with the capital in each of 21 principal manufacturing industries, and shows the respective rates of increase from 1900 to 1910:

	1900.	1905.	1910.	Increase, 1910 over 1900. *Per cent.*
Railways:				
Gross capitalization...	$11,491,035,000	$13,805,258,000	$18,417,132,000	60.3
Net capitalization	8,803,156,000	9,940,854,000	14,375,530,000	63.3
Cost of road and equipment	10,263,313,000	11,951,349,000	14,387,816,000	40.2
Agricultural implements	157,708,000	196,741,000	256,281,000	62.5
Boots and shoes	110,363,000	136,802,000	222,324,000	101.4
Bread and other bakery products.....	80,902,000	122,353,000	212,910,000	163.2
Clothing (men's).....	140,191,000	176,557,000	275,320,000	96.4
Copper, tin, and sheet iron	49,679,000	147,608,000	217,532,000	337.9
Cotton goods.....	467,240,000	613,111,000	822,238,000	76.0
Electric machinery, apparatus and supplies..	83,660,000	174,066,000	267,844,000	220.2
Flour and grist mill products.....	189,281,000	265,117,000	349,152,000	84.5
Foundry and machine shop products.....	790,741,000	1,034,135,000	1,514,332,000	91.5
Furniture and refrigerators.....	109,267,000	158,986,000	227,134,000	107.9
Gas, illumination and heating.....	567,001,000	725,035,000	915,537,000	61.5
Iron and steel, blast furnaces.....	143,159,000	236,146,000	487,581,000	240.6
Iron and steel, rolling mills	430,232,000	700,182,000	1,004,735,000	133.5
Leather.....	173,977 000	242,584,000	332,727,000	91.2
Liquors, malt	413,767,000	515,630,000	671,158,000	62.2
Lumber and timber products.....	541,595,000	733,708,000	1,176,675,000	117.3
Paper and wood pulp...	167,508,000	277,444,000	409,348,000	144.4
Printing and publishing.	333,003,000	432,854,000	588,346,000	76.7
Slaughtering and meat packing	190,209,000	240,419,000	383,249,000	101.5
Tobacco manufactures..	111,517,000	323,982,000	245,660,000	120.3
Woolen, worsted and felt goods, and wool hats .	265,730,000	314,081,000	430,579,000	62.0

This table shows that from 1900 to 1910 the amount of capital invested in the principal manufacturing industries of the United States increased at a higher rate than either the gross capitalization, the net capitalization, or the cost of road and equipment of the railways. This higher rate of increase for the principal manufacturing

industries is shown by the fact that the aggregate combined capital of the twenty-one industries—which is far less than their gross capitalization—increased 99.6 per cent from 1900 to 1910, whereas the gross capitalization of the railways increased 60.3 per cent, the net capitalization 63.3 per cent, and the cost of road and equipment but 40.2 per cent.

Return on Manufacturing and Railway Capital.

Even more difficult and uncertain than a comparison of the capital values of the agricultural, manufacturing, and railway industries is a comparison of the annual returns upon these capital values. Indeed, it has been found impracticable even to attempt an estimate of the returns from agriculture that would be suitable for such a comparison.[a] In the case of manufactures and railways, however, the operating or running expenses and the taxes may be ascertained, and thus an approximation may be had to the net returns on capital. In this manner, for the following tables the gross and net value of the products of the two industries have been computed upon as nearly a comparable basis as possible. The net return has been ascertained by deducting from the respective gross value of products in the case of manufactures, and from gross earnings in the case of the railways, all operating expenses,

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[a] The returns of gross value of agricultural products, as compiled by the Census Bureau in 1910, contain considerable duplications, due for the most part to the inclusion of both the value of all live stock products and the value of all crops. A large proportion of the crops being fed to the live stock, the value of live stock is thereby enhanced, and there occurs a duplication of value—the value of the crops so fed being included in the value of all crops and in the value of all live stock. The Census Bureau discusses this duplication in the following words:

> "The Census Bureau has made no attempt to ascertain the total net value of farm products for 1909, including both that of crops and that of animal products. To add the value of these two groups of products together involves extensive duplication, since large quantities of crops reported are fed to the animals on the farms. It is impossible to ascertain accurately the amount of such duplication, and the attempt to do so, which was made at the Twelfth Census, was not considered satisfactory in its results. Moreover the amount spent by farmers for animals purchased in 1909 has not been subtracted from the value of animals sold and slaughtered in 1909. The gross total of $8,498,311,413 for 1909 is not closely comparable with that reported for 1899, $4,739,118,752, because of differences in the method of reporting the value of live stock products."

In addition to the difficulties presented by this duplication, it is impossible to make a satisfactory estimate regarding the taxes paid on agricultural property, the value of the labor of farm proprietors and their families, the amount of certain minor expenditures, such as for twine, oil, etc., and the cost of depreciation on buildings, implements, and appliances.

including taxes. In each case, interest on capital is included in the net return.[a]

GROSS AND NET RETURNS FROM MANUFACTURES.

	1900.	1905.	1910.
Gross returns:			
Gross value of products....	$11,406,927,000	$14,793,903,000	$20,672,052,000
Expenses:[b]			
Cost of materials.....	6,575,851,000	8,500,208,000	12,141,791,000
Salaries and wages.....	2,389,132,000	3,184,884,000	4,365,613,000
Miscellaneous expenses, including taxes.....	905,442,000	1,453,168,000	1,945,676,000
Total	$9,870,425,000	$13,138,260,000	$18,453,080,000
Net return.....	$1,536,502,000	$1,655,643,000	$2,218,972,000

GROSS AND NET RETURNS FROM RAILWAY OPERATION.

	1890	1900	1905	1910
Total operating revenues.....	$1,051,877,632	$1,487,044,814	$2,082,482,406	$2,750,667,435
Expenses:				
Total operating expenses, including wages.....	692,093,971	961,428,511	1 390,602,152	1,822,630,433
Taxes.....	31,207,469	48,332,273	63,474,679	103,795,701
Total.....	$723,301,440	$1,009,760,784	$1,454,076,831	$1,926,426,134
Net return, including interest on capital.....	$328,576,192	$477,284,030	$628,405,575	$824,241,301

[a] In the following discussion of net returns, the statistics of manufacturing products cover as nearly as possible the calendar year preceding the census year, while the statistics of railway operating returns apply to the fiscal year ending June 30 of the census year. Thus the product manufactured during the calendar year 1909 was that covered by the census of 1910, and is here discussed under the latter year; with the manufacturing returns for the calendar year 1909 are compared the railway returns for the fiscal year ending June 30, 1910.

[b] It should be pointed out that the item "salaries and wages" does not include salaries paid to proprietors or firm members interested in non-corporate manufacturing establishments. There were 273,265 of these proprietors and firm members in 1910 for whom no definite salaries were reported. The railways are virtually all owned by corporations, all employees from president down being paid a definite salary or wage. To some extent, therefore, the expenses shown for the manufacturing and railway industries are not comparable. On the other hand, non-corporate manufacturers produced in 1910 only one-fifth of the total value of products manufactured in that year, while the average size and importance of the individual non-corporate establishment was so small that the return to the proprietor or firm owner could not be differentiated between wage and profit.

Depreciation of the road and equipment of railways is, under the accounting system prescribed by the Interstate Commerce Commission, provided for through the operating expense account. The practice of manufacturing establishments in regard to depreciation of plant is not uniform, but it may be supposed that prudent management will, in the long run, charge the cost of repairs and replacement (which may be said to stand for a depreciation account where no such definite account is maintained) to running expenses.

As has been specified in these pages, and especially in the appendix, there have been variations in the requirements of the Bureau of the Census at different times for ascertaining the capital value of manufactures. Moreover, in computing such vast aggregates there is always the necessity for adjustments of one kind and another so that different persons may not always arrive at identically the same results in handling the intricate data. Indeed the same person may be obliged at one time to give consideration to various factors that bring about results varying from those of a similar adjustment at another time. Furthermore, the income account here shown for manufactures differs from that of the railways in the fact that the reported railway returns represent cash actually received, while the reported value of products manufactured in any year is not only partially made up of cash already taken in, but is also in part an estimate of the probable market value of such portion of the product as is not yet sold, and in part consists of outstanding accounts the settlement of which may entail loss. In other words, the manufacturing returns are partially at least based on estimates. It therefore cannot be too strongly insisted that the tables and the deductions therefrom on the preceding pages are of broad and general significance only. It is believed, however, that possible variations, to whatever cause they may be due, do not impair such broad and general significance.

If it be necessary to bear in mind these qualifications as pertaining to the fundamental statements of capital values and of the return thereon, it will be all the more necessary to bear in mind the limitations that must govern any attempt at comparison of the relative return on capital. Yet in this country the dollar is the common denominator of values. The dollar measures the values of things utterly dissimilar, of all things which enter into purchase and sale. Dissimilar in many respects in their essential nature and in their relations as are the products of manufacture and the service of transportation, they are measured by dollars when they are sold, and the net return upon capital values is measured in dollars. It is the expression of these net returns in dollars that guides the investor in placing his money in one or another industry.

In the table on page 14 were given, subject to the qualifications that repeatedly have been expressed in these pages, the capital values of manufacturing and the railways. On page 29, subject to the qualifications that likewise repeatedly have been expressed, are tables giving the gross and net returns from manufactures and from railway

transportation. It therefore may be possible in terms of the dollar to arrive at the ratio of the net returns on the capital of each industry and to compare the net returns on the capital of one industry with the net returns on capital in the other.

In the next table are set forth the capital values of the two industries, the return on capital as expressed in the preceding tables, and the percentage of that return. It will be perceived that the years for which there is available complete information that is approximately comparable for each industry are those designated as 1900 and 1910. These may be considered to mark the beginning and the end of a decade which comprised a fairly distinct industrial era. In 1900 the country was on the high tide of recovery from prolonged industrial depression; in 1910 it was enjoying exceeding prosperity, both the gross and the net earnings of the railways attaining a higher mark than for any preceding or subsequent year. It will be noted that in the case of the railways the percentage of net return is computed on the cost of road and equipment, which is the item comparable with the capital value of manufactures as given.

Comparison of Net Returns on Capital.

	1900.	1905.	1910.
Manufactures:			
Capital..... ...	$8,975,256,000	$12,675,581,000	$18,428,270,000
Net return on capital .	1,536,502,000	1,655,643,000	2,218,972,000
Per cent of net return.	17.119	13.062	12.041
Railways:			
Cost of road and equipment.....	$10,263,313,400	$11,951,348,949	$14,387,816,099
Net return.....	477,281,030	628,405,575	824,241,301
Per cent of net return.	4.650	5.258	5.729

In 1900 the percentage of net return upon capital in manufactures was nearly four times as great as that on the cost of road and equipment of the railways. In 1905 it was two and one-half times as great.

From 1900 to 1910 the capital in manufactures increased 105 per cent, and the cost of road and equipment of the railways increased 40.2 per cent. In the latter year the percentage of net return on capital in manufacture was two and one-tenth times as great as that of the railways.

While these comparisons are subject to qualification, it is not believed that were absolutely accurate and comparable data available there would be more than a negligible change in the relation of these ratios of return.

APPENDIX.

A careful study of the census reports discloses that the variations specified below affect the comparability of the data as to the capital value of the agricultural and manufacturing industries as set forth by the Census Bureau even for 1890 and in subsequent reports. They demonstrate clearly that the data included in the reports prior to 1890 are entirely unavailable for comparative purposes.

Agriculture.

Census statistics extending back to 1850 show for each State the value of land and buildings employed in agriculture and the value of implements and machinery and live stock.

The Census of Agriculture of 1860 included all farms with an annual marketed product to the value of $100 or more. This minimum was changed in 1870 to farms containing three acres in area or marketing annually $500 of product, with the proviso that no farm be enumerated unless it utilize the labor of at least one able-bodied man. This limit for 1870 was retained in the enumerations of 1880 and 1890, but for that of 1900 it was modified to take in any farm not otherwise included, provided the operation of such a farm required the constant attention and services of one man.

The census of 1870, although intended to cover the year ending June 1st, actually presented data relating in part to 1869 and in part to 1870. The same difficulty of securing returns all relating to the same specific year was met in 1880.

The enhancement in the value of farm property shown by the returns of 1870 over those of 1860 was in part due to the premium of 25 per cent on gold in 1870.

Moreover, the returns for 1870 were regarded by the census authorities themselves as defective and incomplete. Many farms were omitted in the South, in Massachusetts, and elsewhere. There was the same difficulty in 1880, many farms and western ranges failing of enumeration, although in some other respects the census of 1880 was the most nearly complete of any prior to 1900.

It is pointed out in the census report for 1900 that the data as to capital return for agriculture and for manufactures do not correspond. The only forms of agricultural capital reported by the census were

land, buildings, improvements, implements, machinery, and live stock which correspond to fixed capital in manufacture. Live or free manufacturing capital, such as cash and sundries, has its counterpart in agriculture in the items "value of farm products on hand," money due from sale of products, or in bank for supplementary use on the farm, and value of growing crops, but as to the value of these items definite information was not obtained. The same qualifications as to the comparability of agricultural and manufacturing capital values apply to the census returns for 1910.

Manufactures

The schedules for the earlier censuses of manufactures were changed from census to census, the data therefore not being comparable. From the census of 1870 "many industries from which it was difficult to obtain satisfactory statistics" were omitted. Likewise in 1880 some manufactures were not included, and in lesser degree this was also the case in 1890. Twenty industries or branches of industries omitted in 1880 were included in 1890.

The census report of 1870 admitted the returns for that year to be "entirely untrustworthy and delusive," owing to the difficulty of securing uniform or complete statements from industrial units. The report expresses the opinion that not over a fourth of the capital actually invested was returned. Moreover, all values reported in 1870 were expressed in terms of currency, which was then 25 per cent in excess of values in gold.

The report of 1890 was elaborated to include under capital such items as borrowed cash, of which cognizance had not theretofore been taken, and allowance was made for rented capital, such as rented buildings.

Not until the census of 1900 had there been used the same schedule as of the previous census. The schedule of 1890 was adopted for 1900, and substantially this same schedule was used in 1905 and 1910, but with changes in the definition of what constitutes a factory and in the classification of factories. The census of 1900 stated that returns of capital in manufactures prior to 1890 "have no real statistical value, owing to the vague and general character of the form of inquiry." The statement that statistics as to manufactures for periods earlier than 1890 are practically useless for comparative purposes is repeated in the census for 1905.

Even as late as 1905 the census report emphatically declares that it is impossible to so define the word "capital" for statistical purposes as to make the thing measured tangible, restricted, and uniform.

For the census of 1905 the definition of a factory was considerably restricted as compared with that of 1900 and earlier census years. A retabulation of the data for 1900 was made to accord with the classification of factories established for 1905, but this retabulation applied to the capital as a whole, not being carried out to include its component parts. It is therefore feasible to show only the total capital invested in manufactures by States on a comparable basis for 1900, 1905, and 1910.

To a better understanding of the change in definition of a factory and classification of factories made by the Census Bureau in 1905 it is necessary briefly to consider the prior practice. From 1850 to 1890 the census law provided for a census of establishments "of productive industry." The law authorizing the census of 1900 provided more specifically for a census of the "manufacturing and mechanical products" of the country. These terms were broad enough to include all industry that could be reached by the census agents. In 1905 the law distinctly restricted the census of manufactures "to manufacturing establishments conducted under what is known as the factory system exclusive of the so-called neighborhood and mechanical industries." This definition, which was also followed in 1910, restricted the inquiries of the census agents to factory establishments with a product to the value of at least $500 a year. Neighborhood and local mechanical industries were excluded, as well as manufacturing in educational, eleemosynary, and penal institutions.

The difference between the results obtained under the definition of a factory followed in 1900 and that which obtained in 1905 is shown in the following table, which shows the number of establishments, the capital, and the value of products returned and promulgated by the census of 1900 and the returns of that census under the revision made in 1905 in order that the returns might be comparable with those for the latter year:

	1900, original.	1900, revised.
Number of establishments	512,254	207,562
Capital	$9,817,434,709	$8,978,825,200
Value of products	13,004,400,143	11,411,121,122

Railways.

There is no attempt in this study to settle the controverted question as to what properly constitutes the capital value of the railways. Gross capitalization, net capitalization, and the cost of road and equipment, the three capital items set forth in the reports of the Interstate Commerce Commission, have all been utilized, and it has been pointed out that cost of road and equipment is perhaps more nearly analogous to the capital values used for agriculture and for manufactures. A comparative study of railway investment extending back over any considerable period must rest on one or another of these items. Clearly it cannot rest on bases that have but recently entered into consideration. Thus studies of physical valuation and the theory of basing railway capitalization upon physical valuation are of comparatively recent origin. "Cost of road and equipment" is an item that did not appear in official governmental reports until 1890, when it was embodied in the annual statistical report of the Interstate Commerce Commission, but the term was used as early as 1863 by Samuel Hallett & Company, New York bankers, in a report on the resources of the United States. Data as to capitalization are available to a certain extent for the period prior to 1890, but the earliest statistics that have been found deal with cost of construction of road, as distinguished from cost of equipment.

Thus David Stevenson, an English civil engineer, who discussed American engineering in 1837, cited the cost per mile of seven different pieces of railway lying in Maryland, Pennsylvania, New York, and South Carolina. The weighted average of these costs, which are given by him for an aggregate of 468.33 miles, is $19,009.50 per mile If this cost be assumed as applicable to all the railway mileage in the United States in that year, we have for a total of 1,652.25 miles, also cited by Stevenson, a cost of $31,408,000.

F. Von Gerstner, in a German work published in 1843, estimated the railway mileage in the United States as 9,220.96 miles. For 8,488.46 miles of this he gives data as to cost which average $20,437 per mile. At this rate per mile the cost of all the railways in the United States at that time was about $188,448,000.

The American Almanack for 1847, discussing the cost of 4,760.75 miles of railway in the United States, set the aggregate for 1845 at $129,177,000. Although admittedly incomplete both as to mileage and as to cost, the reduction of the aggregates to a per mile basis sheds

light on the cost of railway construction at that time. The average cost per mile was $27,138.

Hinton R. Helper, in "The Impending Crisis," estimated the mileage of American railways in 1857 at 24,714 miles. The aggregate cost of the railways was $633,566,000, but as this amount relates to 1855 and a somewhat different mileage than that of 1857, no average per mile can be computed.

Henry H. Flint, writing in his "Railroads of the United States" of 1857, estimated the cost of the American railways existing in that year at $920,000,000. As this estimate covered 26,000 miles, their average cost per mile was not far from $35,400.

Appleton's Annual Cyclopedia estimated the cost of the railway mileage of the United States in 1868-9 at $1,517,500,000. Flint's estimate for 1868 is not far from this—$1,532,500,000. Poor's Manual for 1868-9 gives a slightly higher amount, $1,600,000,000. This last estimate is based on the capital account which Mr. Poor remarked as considerably exceeding the money actually expended. The costs per mile based on these estimates appear to be as follows: Appleton, $41,-022; Flint, $40,300; Poor, $41,000.

President Hadley's estimate of cost for January 1, 1884, was $7,320,000,000, while the Interstate Commerce Commission in its statistical report for 1890 returned the cost of road as $7,333,096,000. This was exclusive of cost of equipment

It will be seen from this that statistics of cost of railway plant and equipment prior to 1890, when the Interstate Commerce Commission first presented complete official reports of such costs, are scattering, incomplete, and far from reliable. That is, they were based on individual estimates and opinions which, however careful and intelligent, are not in the nature of things as accurate as official compilations. Even the amounts showing cost of road in the reports of the Interstate Commerce Commission are open to the criticism that the returns of individual railways from which they are compiled rest in part on the estimates and opinions of railway officials and not on written records. This criticism is especially applicable to the data published by the Commission in 1890, which embodies for the first time these reports of the railways, but it is applicable also in greater or less degree to subsequent data which are built upon the returns for 1890.

Commercial Value of the Railways by Geographical Divisions and States.

The United States Census Bureau made a careful investigation in 1904 into the commercial value of the American railways, distributed according to States, and the result of its investigation is given in the following table.

Commercial Value of Railway Operating Property by States: 1904.

(Census Bureau Bulletin 21, 1905, page 8.)

State.	Commercial value of railway operating property as of June 30, 1904.
The United States	$11,244,752,000
North Atlantic Division	3,230,781,000
South Atlantic Division	994,035,000
North Central Division	4,346,413,000
South Central Division	1,188,851,000
Western Division	1,484,672,000
Alabama	$150,211,000
Arizona	68,356,000
Arkansas	124,626,000
California	350,694,000
Colorado	198,261,000
Connecticut	105,369,000
Delaware	17,285,000
District of Columbia	5,578,000
Florida	80,467,000
Georgia	156,603,000
Idaho	91,877,000
Illinois	805,057,000
Indiana	375,541,000
Iowa	344,847,000
Kansas	356,356,000
Kentucky	155,772,000
Louisiana	123,401,000
Maine	80,146,000
Maryland	132,342,000
Massachusetts	250,052,000
Michigan	277,597,000
Minnesota	466,734,000
Mississippi	107,884,000
Missouri	309,768,000
Montana	196,209,000
Nebraska	263,170,000
Nevada	43,745,000
New Hampshire	79,786,000
New Jersey	333,568,000
New Mexico	86,400,000
New York	898,222,000
North Carolina	113,146,000
North Dakota	123,390,000

Commercial Value of Railway Operating Property by States: 1904—Continued.

State.	Commercial value of railway operating property as of June 30, 1904.
Ohio	689,797,000
Oklahoma	158,073,000
Oregon	75,661,000
Pennsylvania	1,420,608,000
Rhode Island	25,719,000
South Carolina	75,500,000
South Dakota	49,646,000
Tennessee	131,166,000
Texas	237,718,000
Utah	90,325,000
Vermont	37,311,000
Virginia	211,315,000
Washington	182,837,000
West Virginia	201,799,000
Wisconsin	284,510,000
Wyoming	100,307,000

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17. (Out of print.)
18. Capitalization and Dividends of the Railways of Texas, Year Ending June 30, 1909.
19. Summary of Revenues and Expenses of Steam Roads in the United States for June, 1911.
20. Summary of Revenues and Expenses of Steam Roads in the United States for July, 1911.
21. The Cost of Transportation on the Erie Canal and by Rail.
22. Summary of Revenues and Expenses of Steam Roads in the United States for August, 1911.
23. Analysis of the Accident Statistics of the Interstate Commerce Commission for the Year Ending June 30, 1911.
24. Comparative Railway Statistics of the United States, the United Kingdom, France, and Germany.
25. Summary of Revenues and Expenses of Steam Roads in the United States for September, 1911.
26. Summary of Revenues and Expenses of Steam Roads in the United States for October, 1911.
27. Summary of Revenues and Expenses of Steam Roads in the United States for November, 1911.
28. Effect of Recent Wage Advances upon Railway Employees' Compensation during the Year Ending June 30, 1911.
    Variations in the Number of Railway Employees, 1909-1910-1911.
    Relation of the Number of Employees and their Compensation to Traffic and Revenue, 1909-1910-1911.
29. Summary of Revenues and Expenses of Steam Roads in the United States for December, 1911.
30. Summary of Revenues and Expenses of Steam Roads in the United States for January, 1912.
31. Railway Traffic Statistics, 1900-1910.
32. Summary of Revenues and Expenses of Steam Roads in the United States for February, 1912.
33. Summary of Revenues and Expenses of Steam Roads in the United States for March, 1912.

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36. Summary of Revenues and Expenses of Steam Roads in the United States for May, 1912.
37. Summary of Revenues and Expenses of Steam Roads in the United States for June, 1912.
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